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Interview with Professor Andrew MacIntyre

Director, The Australian APEC Study Centre at RMIT University

This is an edited transcript of an interview with Professor Andrew MacIntyre, the Director of the Australian APEC Study Centre at RMIT University. Prof MacIntyre has now been in his role for a little over three months and in this interview <https://www.youtube.com/watch?v=hNGJBM9sBcM&feature=youtu.be> he talks about his background and discusses the rise of protectionism, the increasing digitisation of economies in the APEC region and where APEC might be heading. Prof MacIntyre is interviewed by Dr Errol Muir, editor of APEC Currents.

EM: Prof MacIntyre, you've now been appointed for three months or so. Can you tell us a little bit about your background, your work in trade issues and economics at Universities, and your other activities.

Prof. MacIntyre: Sure. I have spent all my professional life living in, working in, visiting APEC economies. I've either lived in, worked in, or visited almost all of them now. My main research themes have been pretty much APEC



sorts of themes or themes that infuse the life of APEC around governance, around economic reform, and around regional cooperation. Before coming here to RMIT I was at the Australian National University for quite a while, and before that at the University of California in San Diego. Both of those places are big champions of APEC and its work. And since coming to RMIT I had the good fortune to join the Advisory Board of the APEC Centre and discovering what a gem of an organisation it is. I'd like to take this opportunity to pay tribute to people who have come before us, who have built up the organisation in such a wonderful centre. In particular our former chairman, Alan Oxley, and our former director, Ken Waller. It's people like this that have made the Centre the great success that it is.

EM: One of the issues that APEC has been looking at is the growth of protectionism. It's generally acknowledged that an open trading economy has driven much of world growth in the last decade or so. But we have seen a resurgence in protectionism, particularly since President Trump came to office in the United States. What are your thoughts on this resurgence and about where APEC might go in trying to deal with it.

Prof. MacIntyre: this is clearly a really challenging time. I would say protectionism and more inward looking politics has been gaining momentum progressively since, roughly, the global financial crisis. We see it quite conspicuously in nationalist politics now in some major places: Britain, the United States, China. But we see it in many APEC economies including our own. This inward turn, this rising protectionism, now outright

trade hostility between the United States and China. Things are complicated by being coupled with assaults on the dispute resolution mechanisms of the WTO and more broadly, a weakening of cross-border investment round the world. So, worrying times for the global economy. For our region, all eyes are on the upcoming summit. Encouragingly, APEC's Business Advisory Council has come up with a clear and strong statement that it is submitting to leaders about the sorts of reform they see as necessary. But we need to be under no illusion that the politics of this in key countries around the region is not conducive at the moment. So this is a really challenging time for APEC.

EM: One of the other issues that APEC has been dealing with is the digital economy and the ways in which the digital economy can drive world trade and improve living standards across all countries in the APEC region. How do you see this debate developing and how you see digitisation affecting international trade.

Prof. MacIntyre: I think this is a one of the really exciting areas for all of us. Here in the higher education sector particularly, many of us are charged up by thinking about what might be possible, particularly for cross-border delivery of education services. But if I think about APEC, and what APEC can be doing in this area, two things stand out for me. One is a basic threshold issue of ensuring widespread access to affordable, high-speed digital capability in economies around the region. We are not there yet. We know in Australia we are not there yet. So that's a basic threshold which is still an issue. But moving beyond that, something that APEC can and is helping with, is how we harmonise different privacy regimes that exist around the region, and here the APEC cross-border privacy rules system is starting to get momentum. Singapore joining up to that earlier this year is adding momentum. And that's an area where, if we can get clearer and more agreed frameworks for protection of consumer data, we can see things starting to move.

EM: protectionism and digitisation are two areas where APEC has worked in the past. For the future, the APEC Leaders' summit is going to look at the future of APEC – things that it might do in the future. What are your thoughts on where that might head and, in particular, what effect it might have on the APEC Study Centre.

Prof. MacIntyre: Let's start with the encouraging. The APEC Post 2020 vision group is coming up with a nice vision for the future of APEC. But again we can be under no illusion. There is growing unease about the ability of APEC countries to come together, to get agreement on major issues, and get traction on them. This unease has been growing for some time. There are multiple fora out there vying for precedence for regional cooperation.

Two little noticed, little remarked, side benefits of APEC are important here. One that is always below the headlines is the value of the ongoing and institutionalised meetings among senior officials from across APEC economies and also business leaders from across APEC economies. Anyone involved in those linkages knows the value of them. The other is the opportunity that APEC summits afford for leaders of APEC economies to come together in whatever combination is necessary at that time, for meetings on the margin of the main forum to resolve pressing issues of the day.

Those are nontrivial benefits. That said, if APEC is unable on a sustained basis, to gain traction on the issues for which it is set up, to advance, questions will increasingly be asked about how much things like these side benefits are worth relative to other fora that might be out there. And that's where all of us that care

about APEC, that care about the mission it was set up with, need to redouble our efforts. Here at the Australian APEC Study Centre I can stay with confidence, with certainty, that we are going to redouble our efforts in linking up with Australian policymakers, Australian business leaders, and joining with them and counterparts in other APEC economies to push harder and further on making the case for free and open trade. And freer and more open investment. To push on new linkages where we can build understandings, where we can build collaborative research, to come up with new practical initiatives that have a chance of working their way up through the system. That's what we can be doing.

EM: thanks for that Prof MacIntyre. It sounds that there are lots of challenges ahead for APEC and for the study Centre.

Prof. MacIntyre: and we have a lot of work to do!



Modernising International Trade Law for the Digital Economy: Towards a Multidimensional and Multistakeholder Approach¹

By Professor Andrew D. Mitchell, Director, Global Economic Law Network and Director of Studies, International Economic Law, Melbourne Law Masters and Neha Mishra, Doctoral Candidate, Melbourne Law School, The University of Melbourne

The extraordinary growth of the digital economy requires the adaptation of international trade rules to a new world of trade in digital services and data flows. Being a multilateral trade institution with 164 members, the World Trade Organization (WTO) is a key player in the global regulatory framework for digital trade. However, WTO agreements, which are now over three decades old, do not anticipate the needs of a digitalised economy. This article explores if and how WTO rules can be reformed to better adapt to the modern-day digital environment, considering the highly complex political economy of digital trade, and specifically focusing on the WTO's [General Agreement on Trade in Services \(GATS\)](#).



Andrew D Mitchell

Complex political economy of digital trade

The governance framework for digital trade is extremely complex, involving institutions in different fields of practice such as trade, human rights, internet governance, and economic development. Consequently, the political economy underlying digital trade is also nuanced, as reflected in the various positions taken by different groups on issues such as privacy, cybersecurity, consumer protection, digital development and inclusion, and internet governance.



Neha Mishra

We categorise the predominant policy approaches of WTO members to digital trade as: (a) a market-based approach, favouring choice for the technology industry, including co-regulatory and self-regulatory mechanisms, and balancing various interests in digital trade, primarily from a commercial perspective (United States (US), Japan); (b) an interventionist approach, favouring more regulation on digital issues such as privacy, cybersecurity and online consumer protection, while acknowledging the general benefits arising from free flow of data and digital services (European Union (EU) as a prime example, but also Australia and Canada); and (c) a guarded approach, emphasising the importance of retaining sovereign control over cyberspace, and ensuring maximum gains from digital trade for local players (China, Russia, Indonesia, and now arguably Germany and France).

¹ Adapted from the authors' article, '[Data at the Docks: Modernising International Trade Law for the Digital Economy](#)', published in *Vanderbilt Journal of Entertainment & Technology Law*, Vol. 20 (4), 2018.



These divergent approaches have resulted in conflicting rules in electronic commerce (e-commerce) chapters of different preferential trade agreements (PTAs), increasing legal uncertainty and fragmentation of the legal framework governing the digital economy. For example, the proponents of the market-based approach have adopted expansive rules on e-commerce in their PTAs (eg *United States–Mexico–Canada Agreement*, *Japan–Mongolia Economic Partnership Agreement*), while EU e-commerce chapters usually have more limited scope, particularly due to concerns about data privacy (eg *EU–Japan Economic Partnership Agreement*). In contrast, Chinese PTAs usually do not address any of the contemporary issues in digital trade such as data flows or data localisation (eg *China–Australia Free Trade Agreement*).

Rebooting digital trade reforms

The WTO was an early starter in e-commerce, establishing a [Work Programme on Electronic Commerce](#) in 1998. However, differences between members, particularly the EU and the US, restricted progress for almost two decades. WTO members have now started re-engaging on issues pertaining to digital trade. Since the Ministerial Conference in December 2017, 72 WTO members have been discussing relevant issues pursuant to a [Joint Statement on Electronic Commerce](#), notwithstanding differences in their PTAs. This initiative involves not only digital leaders such as the US, EU, and Japan, but also China (now a major player in the global digital market) and several developing countries, including least developed countries (LDCs) (several of whom have clubbed together as ‘Friends of eCommerce for Development’). Within this framework, members are currently evaluating whether WTO agreements are suited to the digital economy, and the best means to plug gaps in the existing architecture.

Addressing the multidimensional nature of digital trade

The exploratory work under the Joint Statement initiative covers several areas, including: (a) ensuring free flow of information and prohibiting data localisation requirements; (b) improving business and consumer trust through regulations on spam, online consumer protection, data protection, cybersecurity, forced technology transfer, encryption technologies, and involuntary disclosure of source code and algorithms; (c) facilitating electronic transactions and improving trade facilitation and logistics for e-commerce; (d) enhancing market access commitments in relevant sectors; and (e) addressing the digital divide through targeted aid and technical assistance.

These discussions are welcome and touch upon important areas for potential reform of WTO rules. A multidimensional and comprehensive framework on e-commerce would be far preferable to patchy reforms of an outdated GATS framework. However, the first step towards more comprehensive reform will be to arrive at a common understanding of GATS classification of digital services, in order to clarify members’ existing GATS commitments. For example, while several WTO members have made agreed in GATS to liberalise computer and related services, debate exists as to whether certain digital services such as cloud computing and internet platforms fall within the scope of these GATS commitments.

As data-driven sectors and micro-multinationals have multiplied, new issues have arisen that are not explicitly covered by GATS. To address such issues, new rules are required to balance competing policy objectives, such as the free flow of data and digital services, and promoting a stable, secure and coherent regulatory framework for data flows (including adequate privacy and security laws, and other regulations that promote consumer trust in the digital environment). Thus, in addition to new WTO provisions on free

flow of data and prohibitions on data localisation, WTO rules are essential to promote a sound regulatory environment for e-commerce. More coherent and binding provisions are also needed to assist developing countries and LDCs to integrate into the global digital marketplace, particularly through technical assistance.

The WTO as a platform for digital trade rules

While the WTO is not the appropriate institution to set technical standards on internet policy issues (such as data/network security) or prescribe standards for data protection, WTO agreements can be effective in: (i) promoting non-discriminatory and transparent regulations; (ii) requiring members to adopt basic regulations to promote a secure and open digital trade environment; (iii) offering mechanisms to develop interoperability between regulatory frameworks or regulatory cooperation, where harmonisation is not possible or desirable; and (iv) offering support to developing countries and LDCs.

Although PTAs deal with many of these issues, the WTO is a more suitable platform for undertaking long-term reform as it allows better representation of the views of developing countries and LDCs while minimising the formation of divided regional blocs. The most judicious approach for reform would be the negotiation of a new WTO agreement on digital trade, containing detailed obligations on e-commerce that go beyond PTA e-commerce chapters. A new agreement could incorporate far-reaching, cross-cutting obligations on data flows and digital services. The existing plurilateral negotiations might lead in this direction. Another possible interim approach would be to use the existing mechanisms within GATS, for example by adopting a Reference Paper on Electronic Commerce (adopted by individual WTO members as 'additional commitments' under GATS art XVIII) or negotiating dedicated domestic disciplines on e-commerce under the 'domestic regulation' provisions in GATS art VI.

The need for a multi-stakeholder approach in digital trade

In reforming digital trade rules, multi-stakeholder participation is required, given the unique relationship between businesses, governments and consumers in the digital economy. Increased dialogue and coordination among governments, industry, international organisations, and civil society (at domestic and transnational levels) would help develop a coherent regulatory framework for digital trade. Institutional coordination could be achieved through WTO consultations with other relevant international organisations such as the United Nations Conference on Trade and Development, International Telecommunications Union, Organisation for Economic Co-operation and Development, and the Asia-Pacific Economic Cooperation forum. Informal liaison to with internet governance bodies such as the Internet Engineering Task Force, Internet Society, Internet Corporation for Assigned Names and Numbers, and Internet Governance Forum would also enable a more comprehensive understanding of policy issues in the digital space. Although an unconventional approach, the WTO has already shown openness to this model through initiatives such as eTrade for All, the Enhanced Integrated Framework, and the Electronic World Trade Platform.

Given the significance of the WTO in the global governance framework, WTO members should continue deliberating on relevant e-commerce issues, working towards a multidimensional and multistakeholder regime for governing digital trade issues. This dialogue will be fundamental in promoting the growth of an



open and trusted digital economy, while facilitating the inclusion of developing countries in the global marketplace.





Digital trade in Asia Pacific FTAs – building blocks for global rules

By Kristen Bondiotti, Principal Consultant Services, The Australian APEC Study Centre

The Comprehensive Progressive Trans Pacific Partnership Agreement (CPTPP) contains the most comprehensive rules on e-commerce and digital trade of any FTA to date. It establishes reference points for new standards in trade agreements in the region– as demonstrated by the recently negotiated update of NAFTA among the US, Mexico and Canada (USCMA).

The CPTPP can be expected to inform approaches to regulation of digital services and data in other Asia Pacific FTAs, and potentially, the negotiation of multilateral rules on digital trade.



Kristen Bondiotti

International rules matter for digital trade. They create binding commitments which reduce barriers, address regulatory gaps and facilitate the flow of services and data across borders. They can provide frameworks for countries to improve their regulatory systems. They deliver greater certainty to business.

Negotiating these rules at the multilateral level raises serious challenges. It also presents an opportunity for APEC to contribute to emerging global rules at a time when the WTO system is at a critical juncture.

Negotiation of digital trade rules can draw on APEC’s work on regulation of data privacy and cyber-security, services policy and liberalisation. APEC can play a role in advancing international cooperation to ensure negotiating priorities reflect the current needs of economies, business and consumers.

CPTPP leads the way

The CPTPP is the first agreement to regulate digital trade and promote internet based commerce in a comprehensive way. The agreement has an e-commerce chapter, intended to clarify the rules around movement of data between member countries and keep information flowing freely.

Key provisions are summarised in the table below:

Commitment	Obligation
Cross border data flows	Guarantees the free flow of data across borders by service suppliers and investors where it is part of business activity. This right is subject to public interest regulation for security, privacy, and other legitimate goals.
Non discrimination	Mandates that digital products and services are treated the same as non-digital products



Location of computing facilities (data localisation)	Bans data localisation requirements for computing facilities. TPP-11 countries cannot force businesses to build data storage centres or use local computing facilities in the TPP-11 market they are seeking to access. The prohibition is not absolute. Governments may restrict the location or use of computing facilities in order to achieve legitimate public policy objectives (such as data privacy). The ban on data localisation does not apply to financial institutions and cross-border financial services suppliers.
Source code	Prohibits mandatory transfer of or access to source code of software as a condition of doing business in another party.
Customs duties	Bans customs duties (but not non discriminatory local consumption or sales taxes) on electronic content or transmissions including video games, music, software and other digital products
New services	Provides for automatic market opening of 'new services' sectors unless members explicitly decide to close them. This encourages innovation and helps prevent future discrimination.
Consumer protection	Mandates frameworks for legal protection of consumer privacy and personal information
Data protection	Encourages countries to adopt mechanisms that promote compatibility and interoperability between different data protection frameworks, including principles and guidelines of international bodies

CPTPP also recognises the 'global nature of e-commerce' and supports cooperation' in regional and multilateral fora to promote the development of electronic commerce.'

A regional model?

The recently negotiated update of the North American Free Trade Agreement (NAFTA) among the United States, Mexico and Canada (USMCA) incorporates and builds on CPTPP provisions and in some instances, goes further to promote cross-border data flows.

It has a chapter dedicated to digital trade issues which contains new commitments not present in CPTPP or prior FTAs. This includes:

- protection for internet service providers from liability for the actions of their users:ⁱⁱ
- provisions to promote (but not require) the publication of open government dataⁱⁱⁱ;
- language aimed mitigating evolving cybersecurity threats through risk based approaches consensus-based standards and risk management best practices. It requires parties to collaborate on cybersecurity issues.

The USMCA also strengthens and expands upon some CPTPP provisions. For example, there are stronger obligations prohibiting data localization. Unlike CPTPP these obligations extend to financial services,

provided financial regulators have access to data needed to fulfil their regulatory mandate.^{iv} Protection from mandatory transfers of source code is extended to algorithms expressed in source code. This allows parties to enact algorithmic transparency mandates for all firms, both foreign and domestic.

Rules governing e-commerce are also currently being negotiated in other FTAs involving Asian Pacific economies, such as the Pacific Alliance FTA (involving Chile, Peru, Mexico, Colombia plus Australia, New Zealand, Singapore and Canada), and the Regional Comprehensive Economic Partnership Agreement (RCEP – involving East Asia plus Australia, New Zealand and India).

Not all agreements are expected to deal with digital trade as comprehensively as CPTPP or the USMCA due to diverging approaches to data regulation, but will include provisions designed to ease the flow of data and services across borders.

Frameworks for data privacy

An interesting inclusion in the USMCA is the endorsement of APEC approaches on data privacy. The agreement specifically refers to the APEC Cross Border Privacy Rules (CBPR) System as a ‘valid mechanism to facilitate cross-border information transfers while protecting personal information’ between the parties. Parties are encouraged to take into account the APEC Privacy Framework in the development of their legal framework for the protection of personal information, as well as principles and guidelines of relevant international bodies.

The CBPR is a voluntary, principles based framework for the development and implementation of data privacy policies aimed at establishing effective privacy protections and promoting electronic commerce throughout the Asia Pacific region. Participating economies include Australia, the United States (US), Mexico, Japan, Canada, Singapore, and Korea.^v

USMCA also commits parties to ‘maintain a dialogue on the promotion and development of mechanisms, including the APEC Cross-Border Privacy Rules, that further global inter-operability of privacy regimes; and to participate actively in regional and multilateral fora to promote the development of digital trade.’

Multilateral moves - Asia Pacific reference points

CPTPP e-commerce provisions can be used to inform approaches to address ecommerce and digital trade in other regional FTAs. The agreement offers a model which can be scaled up (as in the USMCA) or scaled down as base from which to build future commitments (as in RCEP), depending on the needs of FTA parties. US business has already flagged a possible US/Japan bilateral FTA as a platform for negotiation of standard setting rules on digital trade.^{vi}

APEC’s cross-border privacy framework can serve as the blueprint for regional rules for data transfer, privacy and enforcement. There already exists between APEC CBDPR members a level of consumer, business and regulator trust in cross border flows of personal information which can be built on and bound into trade agreements.

Both Asian Pacific FTA models and APEC principles can contribute to the development of international rules on digital trade. At the very least they bring to the table a suite of issues for discussion on globally acceptable approaches to regulation of digital services and data.

This is particularly relevant given recent moves in the WTO to negotiate a plurilateral agreement on e-commerce among willing WTO members. In October 2018 the US, Japan, and the European Union committed to the 'timely launch' of negotiations on a broad e-commerce deal aimed at inhibiting digital protectionism and enhancing 'business environments through the promotion of data security.' They aim to move from discussions to negotiations on 'possible elements to be included in a future agreement on digital trade in 2019.' It follows the launch of a 2017 initiative in the WTO (by Australia, together with Japan and Singapore) to work toward future negotiations on electronic commerce, including on data and services.

Digital trade issues are also likely to be a key topic of discussion among the G20 countries in 2018/19. The digital economy and services and regional connectivity are key themes APEC in 2019 with Chile as host.

Not so fast...

A global agreement digital trade will be a long term process. It will need to reconcile serious differences in regulatory approaches and varying levels of data regulation among participating economies (notably between the EU and US and also among APEC members).

Previous plurilateral negotiations among WTO members on trade in services (TiSA) were unable to resolve an impasse on treatment of cross border data flows between the EU and the US. Data transfer restrictions under the EU's General Data Protection Regulation is at odds with prohibitions on data transfers in the CPTPP. Many economies in Asia Pacific have laws on data localisation.

More bilateral FTAs with provisions regulating e-commerce and trade can be expected to emerge long before WTO rules are negotiated - for example in the RCEP, Pacific Alliance, and possibly key bilateral deals involving the US (Japan, UK).

Agreeing on global rules raises serious challenges. But it also presents an opportunity for APEC to contribute to emerging global rules at a time when the WTO system is at a critical juncture.

Role for APEC

How can APEC help to address these challenges and foster international rules which encourage open and competitive services and use of data?

The negotiation of provisions in trade agreements governing digital trade can draw on APEC's work on regulation of data privacy and cybersecurity, services policy and liberalisation. Data privacy rules are just one example of a regionally accepted framework which can form the basis for binding regulatory outcomes.

APEC can advocate the value of commitments in FTAs to support cooperation at the multilateral and regional level on development of principles to guide regulation of digital trade.

It can support new rules which complement current rules governing goods and services in the WTO and existing FTAs.

As pointed out by the Chair of APEC's Economic Committee, 'Regulations should be appropriate to evolving technologies and address the concerns of stakeholders without creating unnecessary burdens and obstacles for entrepreneurs.' APEC is also uniquely placed in the region to encourage its members to exchange policies and best practices on how to regulate the internet and the digital economy; bring experts



together to develop a next-generation approach to regulating the digital economy; and consult with private sectors and other agencies to ensure negotiating priorities reflect the current needs of economies, business and consumers.



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ⁱ Not yet in force. CPTPP will enter into force December 30 2018.

ⁱⁱ This obligation does not apply to Mexico for three years from entry into force.

ⁱⁱⁱ The agreement encourages adherence to best practices for open data, including ensuring it is in open, machine-readable formats.

^{iv} This obligation does not apply to Canada for one year. The rest of the digital trade chapter does not apply to financial services.

^v See <http://cbprs.org/GeneralPages/About.aspx> and <https://www.ag.gov.au/consultations/pages/APEC-cross-border-privacy-rules-public-consultation.aspx>

^{vi} The scope of a US/Japan FTA is yet to be determined. The US cannot formally begin negotiations until January 2019. It is currently conducting a process of public consultation on US negotiating objectives. See <https://www.federalregister.gov/documents/2018/10/26/2018-23569/request-for-comments-on-negotiating-objectives-for-a-us-japan-trade-agreement>

Accounting for the Sustainable Development Goals is crucial

By Dr. Alberto Posso, Principal Research Fellow, The Australian APEC Study Centre

The United Nations Sustainable Development Goals adopted by all 193 United Nations members are playing an important role in aligning business and government activities with the need for a fairer and environmentally sustainable world. However, as the UN notes, “In order to make the 2030 Agenda a reality, broad ownership of the SDGs must translate into a strong commitment by all stakeholders to implement the global goals”ⁱ.

There are 17 SDGs ranging from poverty reduction, to gender equity, to environmental management and to peace and justice. Information about the SDGs is available here:

<https://sustainabledevelopment.un.org/sdgs>



Alberto Posso

One of the criticisms of the SDGs is that there are way too many of them. Indeed, there are almost 140 targets and 232 indicators that can be used to measure the extent to which governments and firms are working toward achieving sustainable development.

Even though measurement is essential, the fact can be that with so many indicators it is possible for corporations to match at least some of their current activities to the SDGs without actually changing any practices.

On the other hand, it is also possible that (some) CEOs have carefully studied the SDGs and decided that they want to make the world a better place. They have been informed by the SDGs and have enacted palpable changes. Indeed, the fact that there are so many indicators can help CEOs focus their efforts toward achieving the SDGs in their firms, industry, country and region!

To identify what is actually happening is an empirical question: Does corporate adoption of the SDGs lead to changed behaviour?

To better understand corporate and national progress towards the SDGs, it is necessary to disentangle these issues and test for causality. For that we need more and better data. We need to understand if commitment toward the SDGs by, for example, signing a letter is leading to better practices, using the SDG targets and indicators as measurable outcomes, but controlling for what has been done in the past!

One first step toward understanding this issue is obtaining better data. This is not easy. A recent report by Mori, Wyatt and Nuttallⁱⁱ looked at the top 20 companies listed on the Australian Stock Exchange and showed that many major Australian companies are using the SDGs to improve accountability to stakeholders and embed environmental sustainability in their operations. But the report also showed that “meaningful disclosure on measurement and transparent reporting of any contribution made to the SDGs is not yet common practice among the companies assessed”.

The question then becomes what incentives are there for firms to gather this information and provide it to academic or government analysts.

This is where domestic policies can make a big difference. If governments have the political will to encourage or require firms to address the SDGs in their annual reports, then firms are likely to follow suit. Issues such as raising the costs of accounting practices are, of course, important. Indeed, some firms may be less able to adopt and measure these new practices than others. Furthermore, more profitable firms in richer countries will better able to provide more data more often. This can potentially generate a large bias in favour of bigger institutions in richer economies, thus painting a very inaccurate picture. To some extent, this is already happening at the cross-national level, where richer economies are more likely to collect the sort of data that is necessary to rank them toward the SDGs.

Support for firms with less resources, especially for those in poor economies is important. This could be government or industry organisation support. SDG Goal 17 is literally called “partnerships for development”. One of its targets is to work together to improve data collection, monitoring and accountability. The UN argues that the SDGs are indivisible, but perhaps Goal 17 is more important in practice. Indeed, how do we know if we are working toward achieving zero hunger (Goal 2) or quality education (Goal 4), if we’re not measuring anything properly? As APEC considers its future relevance and work programs, this could usefully be integrated into a range of APEC programs.

ⁱ <https://sustainabledevelopment.un.org/?menu=1300>

ⁱⁱ Mori Jr, R., Wyatt, R., & Nuttall, A. (2017). *ASX 20 Disclosures on the Sustainable Development Goals*. Melbourne, Australia. Retrieved from https://www.thinkimpact.com.au/wp-content/uploads/2017/12/Think-Impact-SDG-report-2017_27112017.pdf



Asia's Digital Revolution: A new wave of digital innovation is reshaping Asia, raising the region's growth potential

By *Tahsin Saadi Sedik, Senior Economist in the IMF's Asia and Pacific Department*

Asia is embracing the digital revolution. Companies such as Alibaba, Tencent and Baidu are providing a wide range of services from e-commerce to fintech and cloud computing for customers in China and elsewhere. In Indonesia, GO-JEK offers services including ride-hailing, logistics and digital payments. These and other Asian companies are exploiting advances in artificial intelligence, robotics, cryptography, and big data that promise to reshape the global economy and fundamentally alter the way we live and work, in the same way that the steam engine and electricity did in centuries past. In Asia as elsewhere, the digital revolution is rippling across industries from retailing and banking to manufacturing and transportation.

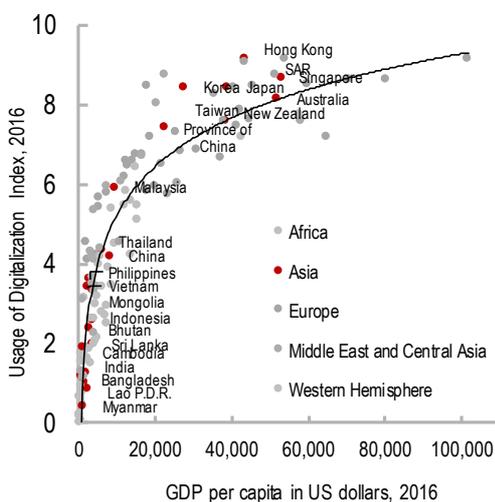


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Asia at the forefront

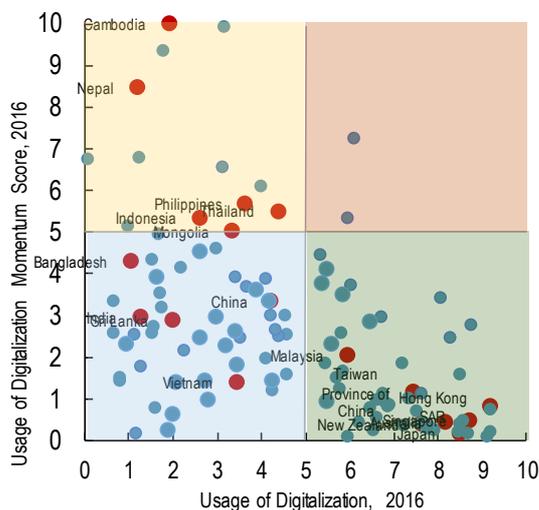
There are Asian players in the lead in nearly every aspect of digitalization, but at the same time, some economies lag significantly behind. Asian economies lie all along the income spectrum, and correspondingly, the region has the highest dispersion of economies in terms of the adoption of digital technologies, with Japan, Korea, Hong Kong SAR, and Singapore being global trendsetters. But at any given income level, Asian economies are at the frontier relative to their global peers (Figure 1). Moreover, even for relatively poor Asian economies, such as Cambodia and Nepal, digitalization is accelerating (Figure 2).

Figure 1. GDP per Capita and Usage of Digitalization
(Index 0–10)



Sources: IMF, World Economic Outlook; International Telecommunication Union; and IMF staff calculations.

Figure 2. Usage of Digitalization: Level and Momentum
(Index 0–10; Momentum change 2012–16)



Sources: IMF, World Economic Outlook; International Telecommunication Union; and IMF staff calculations.



E-commerce and fintech—technologies used to exchange goods and services and deliver financial services—are other areas in which Asia leads. For instance, China accounted for less than 1 percent of global e-commerce retail transaction value about a decade ago, but today, that share has grown to more than 40 percent. The penetration of e-commerce, as a percentage of total retail sales, now stands at 15 percent in China, compared with 10 percent in the United States. E-commerce penetration is lower in the rest of Asia but is growing fast, particularly in India, Indonesia, and Vietnam.

In fintech, too, Asian economies have made significant progress, in many cases leapfrogging into new types of technology. For example, in 2016, mobile payments made by individuals for goods and services totaled \$790 billion in China, eleven times more than in the United States.

Technological progress can bring enormous benefits by boosting productivity and growth and creating new jobs. And the fact is that Asia has already benefited immensely from digitalization. We find that the diffusion of global innovation was the key driver of growth in Asia over the past two decades, with digital innovation alone accounting for about 28 percent of per capita growth (Figure 3).

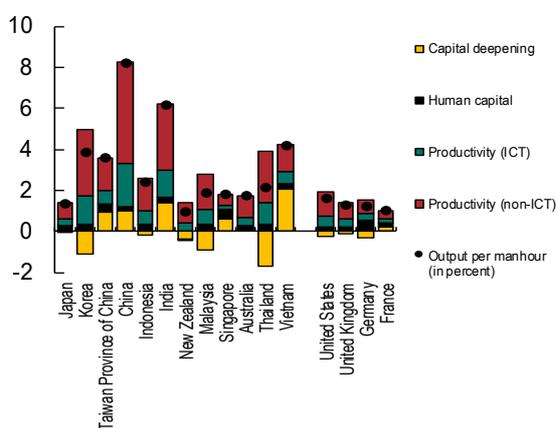
In most of Asia, the share of information and communications technology (ICT) in GDP has increased substantially faster than economic growth. During 2005-15, ICT growth averaged 15.9 percent in India, 13.7 percent in China and 7.1 percent in Thailand, far above their economic growth rates of 7.7, 9.7 and 3.5 percent. In Japan, ICT growth was almost quadruple GDP growth.

And digitalization is becoming a larger component of GDP in many Asian economies. Among the world’s top 10 economies with the largest ICT to GDP ratio, seven are in Asia, including Malaysia, Thailand, and Singapore. Importantly, innovation in Asia is tilted toward the digital sector: if we rank countries according to the ICT share of total patents, Asian economies take up the top five slots—further highlighting the potential of digitalization to boost future growth.

E-commerce has the potential not only to support growth, but also to make it more sustainable. For consumers, e-commerce may translate into better access to a wider range of products and services at lower prices, ultimately boosting consumption.

For firms, e-commerce provides new business opportunities and access to larger markets, and thus supports investment. Our analysis shows that, at the firm level in Asia, participation in online commerce is associated with more than a 30 percent increase in total factor productivity (Figure 4a), or the portion of output not explained by traditionally measured inputs of labor and capital used in production. Innovation, human capital, and to some extent access to finance seem to support online firms’ greater performance. Finally, we find that firms engaged in e-commerce also export 50 percent more (Figure 4b). Interestingly, e-commerce seems to be especially beneficial for smaller firms in Asia.

Figure 3. Sources of Economic Growth
(Percentage points; 1995–2016)

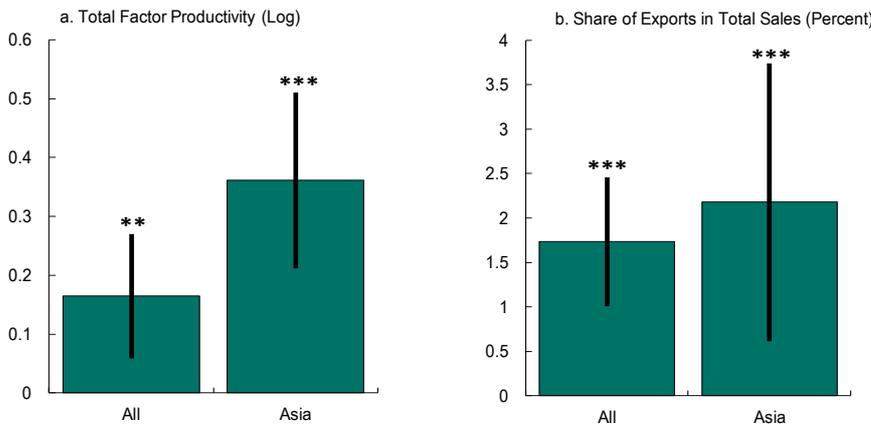


Source: IMF staff estimates.
Note: ICT = Information Communication Technology.





Figure 4. Estimated Impacts of E-commerce Participation on Productivity and Export



Sources: World Bank Enterprises Surveys; and IMF staff calculations.

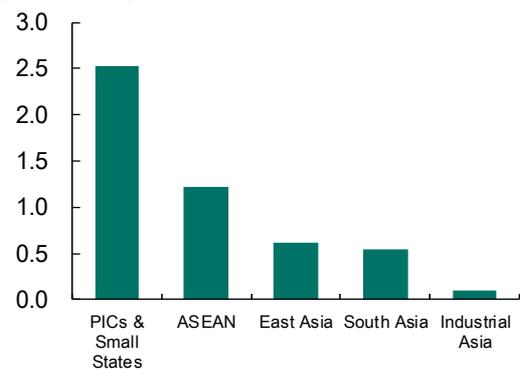
Note: These figures illustrate coefficients and confidence intervals from two firm-level estimations: (a) the impact of e-commerce participation on total factor productivity controlling for firms' age, size, foreign ownership, and export status; and (b) the impact of e-commerce participation on the share of exports in total sales controlling for firms' size, age, and foreign ownership. The error bars refer to the 95 percent confidence intervals around the estimated coefficients. For Asia, the estimated coefficients imply that participation in e-commerce is associated with more than a 30 percent increase in total factor productivity and an increase in the share of exports to total sales by about 2 units, corresponding to a 50 percent rise. ** p<0.05; *** p<0.01.

Financial technologies can also support potential growth and poverty reduction by strengthening financial development, inclusion, and efficiency. Fintech can help millions of individuals and small- and medium-sized enterprises leapfrog access to financial services at an affordable cost, particularly in poor countries. These technologies may also drive substantial efficiency gains in the financial sector. For example, they can provide cross-border payments that reduce both risk and cost for participants.

Finally, digitalization presents opportunities for improving public finance. Adoption of digitalization by governments by improving reporting of transactions, increase revenue from value-added taxes, tariffs, and other sources. If Asian economies were to move halfway to the global frontier, our analysis shows, VAT revenue could rise by 0.6 percent of GDP. For countries that belong to the Association of Southeast Asian Nations (ASEAN), the gains are estimated at 1.2 percent of GDP, and for small Asian states, which are typically further from that frontier, they are on the order of 2.5 percent of GDP (Figure 5). Digitalization can also improve the efficiency of public spending, including via the targeting social assistance.

Figure 5. Potential Import-VAT Revenue Gains from Closing Half the Distance to the Digitalization Frontier, 2016

(Percent of GDP)



Sources: Fiscal Monitor, IMF; and IMF staff calculations. Note: VAT = Value Added Tax; ASEAN = Association of Southeast Asian Nations; PIC = Pacific Island Countries.

Disruptive effects

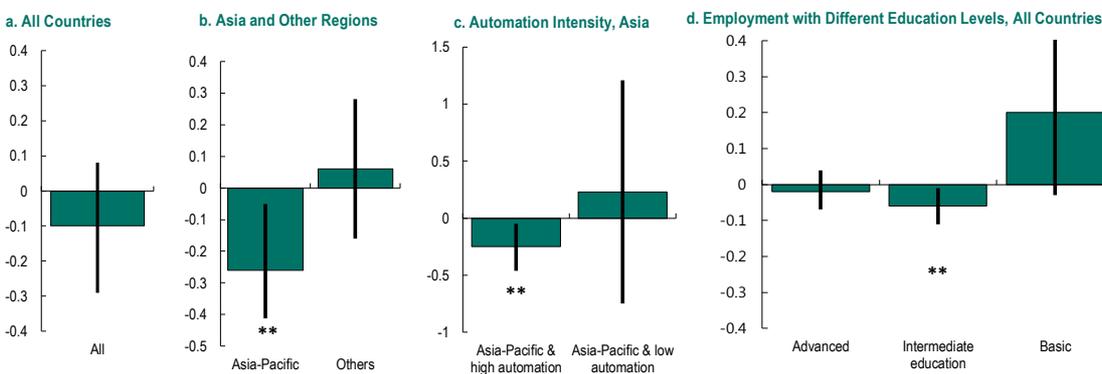
These new technologies are automating increasingly complex activities that could previously be performed only by people. Major transitions lie ahead that could match the scale of historical shifts out of agriculture and manufacturing, creating new challenges for policymakers. This new wave of creative destruction will transform jobs and skills, with old jobs and firms disappearing and new ones emerging. Historically, adjustment to change has been difficult, and gains have been spread unevenly.



Automation via industrial robots is one area in which Asia is clearly at the forefront, with fully two-thirds of the world's industrial robots employed in the region. In our study, we analyze the impact of robot usage on employment across a large sample of countries in Asia, Europe, and Americas. Contrary to some observers' worst fears, we find that the productivity-enhancing (and thus job-creating) effects may have offset the destruction of old jobs.

Focusing only on Asia, however, there is a slight negative impact on overall employment, particularly in heavily automated sectors like electronics and automobiles. Furthermore, like others, we find that workers with medium-level education are more vulnerable to displacement than those with either low or high education levels, since jobs that are most susceptible to automation tend to involve routine tasks performed by workers with mid-level skills. In Japan, with its shrinking labor force, increased robot density in manufacturing is associated not only with greater productivity but also with local gains in employment and wages. Japan's experience suggests that countries such as China, Korea, and Thailand that will face similar demographic trends in the future may also benefit from automation.

Figure 6. Estimated Effect on Manufacturing Employment Growth
(Percentage points, associated with one more robot per 1,000 workers, 2010–14)



Sources: International Federation of Robotics; World Input-Output Database; International Labor Organization; and IMF staff calculations.
Note: Figure is based on regressions of the changes in manufacturing employment on the changes in robots per a thousand employees during the period 2010-2014. The left three charts are based on 14 manufacturing subsectors in 40 countries, and the right chart is based on countries for which education breakdown of employment data is available. Intermediate education refers workers with upper secondary and post-secondary non-tertiary education. Bars show the estimated total effects calculated based on the estimate coefficients for each specified group in the horizontal axis. Error bars refer to the 95 percent confidence interval. ** p<0.05.

Fintech also poses risks to the financial sector if it undermines competition, monetary policy, financial stability and integrity, and consumer and investor protection. These technologies may disrupt the business models of established financial institutions and lead to a migration of activities outside the regulated sector. We find that countries with a greater propensity for technological leapfrogging have also tended to see falling levels of traditional financial infrastructure, particularly bank branches. Unlike US counterparts, Asian tech giants, especially in China, have become key providers of financial services, putting competitive pressures on traditional financial institutions. Crypto-assets, an area in which Asia has been a leader, may pose risks related to money laundering, tax evasion, circumvention of capital controls and other forms of illicit activity.

And while digital platforms may magnify the benefits of e-commerce, they raise competition issues. Economies of scale may lead to winner-takes-all dynamics and pose anti-competition concerns, particularly when e-commerce platforms become large. Digital platforms can also pose risks of tax base erosion as some transactions may move to sectors where lower taxation or compliance are lower. They can also shift transactions or profits abroad, outside the tax net.

Striking the right balance

While the digital revolution is inevitable, the outcome—utopian or dystopian—will depend on policies. Policy responses should strike the right balance between enabling digital and addressing risks. Policies to harness digital dividends include: revamping education to meet the demand for more flexible skill sets and lifelong learning, as well as new training, especially for the most adversely affected workers; reducing skill mismatches between workers and jobs; investing in physical and regulatory infrastructure that spurs competition and innovation; and addressing labor-market and social challenges, including income redistribution and safety nets.

Policy priorities differ across Asia (and the world), as economies' initial conditions vary. But considering the inherent global reach of these technologies, regional and international cooperation will be key to developing effective policy responses. The more willing society is to provide support to those who are left behind, the faster the pace of innovation that society can accommodate and still ensure that all members of society end up better off. With the right policies, digital revolution could be a new engine of growth and prosperity for Asia and the world.

This article is based on a chapter in the IMF's Regional Economic Outlook: Asia Pacific.

<https://www.imf.org/en/Publications/REO/APAC/Issues/2018/10/05/areo1012>

TAHSIN SAADI SEDIK is a senior economist in the IMF's Asia and Pacific Department. The views expressed in this article are those of the author and do not necessarily represent the views of the IMF, its Executive Board, or IMF management. The article is a slightly revised version of *Asia's Digital Revolution*, which was published in the September 2018 edition of *Finance and Development* magazine © International Monetary Fund. Reprinted with permission.